REMARKS

Applicant has carefully considered the office action of July 22, 2005 and offers the following remarks that accompany the above amendments. Applicant appreciates the telephonic interview with Examiner Argenbright on August 10, 2005. Where appropriate, comments from that interview are included below. To the extent necessary, these remarks serve as the Interview Summary required by the MPEP.

Before addressing the rejections, Applicant provides a brief summary of the present invention so that the remarks are considered in the proper context. The present invention is designed to help auto mechanics isolate the reason that the "Check Engine" light has been illuminated in a vehicle. Most vehicles are equipped with oxygen sensors that are used to control air-to-fuel ratios in the vehicle to assist operation of the catalytic converter of the vehicle. The present invention takes advantage of this oxygen sensor and collects oxygen levels sensed by the oxygen sensor. The oxygen levels will rise and fall depending on how completely the fuel in the engine has been burned. When a cylinder within the engine has a combustion inefficiency (up to and including a total misfire), a periodic peak in the oxygen levels will occur. An external probe may be connected to the oxygen sensor and the periodic peaks in the oxygen levels detected. Because there are many different types of engines (V-6, V-8, straight 6, slant 6, etc.) the peaks will not intuitively be connected to the firing of a particular cylinder. The present invention provides the link between the peak and the firing of a particular cylinder by using a database of fingerprints. This database of fingerprints is generated by empirically testing each type of engine and introducing known combustion inefficiencies for each cylinder of the engine being tested. The present invention compares the readings from the oxygen sensor to the database of fingerprints until it finds the closest match. Based on this comparison, the cylinder which is suffering from a combustion inefficiency is identified. While the specification discusses a second embodiment wherein this process is performed within the vehicle computer, the current focus of the claims is on the use of the external probe.

Applicant previously submitted a declaration under 37 C.F.R. § 1.132 regarding the skepticism of experts and the long felt need for Applicant's invention. The Patent Office, in a communication mailed August 1, 2005 indicated that this declaration was not supported by facts. Applicant disagreed with this assertion and scheduled the telephonic interview of August 10. During the telephonic interview, Examiner Argenbright clarified that the communication of

August 1, 2005 misstated the absence of facts because the opinions of experts does not require specific facts in support thereof. Examiner Argenbright further clarified that claims of record as of the filing of the declaration were not commensurate with the claims because they did not recite "misfire" which was the term used in the declarations. Applicant inquired whether amending the claims to recite "misfire" would remove the rejection. Examiner Argenbright said, without commitment, that the declarations would be more compelling in such an instance, but also provided a new reference for Applicant's consideration. Specifically, Examiner Argenbright indicated that U.S. Patent 6,640,619 to Chung is very relevant to the claims. As this reference was provided by the Patent Office, Applicant does not submit this reference in an IDS, but requests that the Patent Office note the reference in future correspondence on PTO form 892 so that the reference is noted appropriately in the written record of the application. If necessary, Applicant can also file the reference in an IDS.

Applicant herein amends claims 1-17 to focus on the probe embodiment of the present invention. Applicant also cancels claims 18-23 to focus on the probe embodiment. Applicant further adds new claims 27-31 with a more specific method of using the probe embodiment. No new matter is added.

Claims 1-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wachi et al. (hereinafter "Wachi") in view of Higgs et al. (hereinafter "Higgs"). Applicant respectfully traverses. For the Patent Office to combine references in an obviousness rejection, the Patent Office must do two things. First, the Patent Office must state a reason to combine the references, and second, the Patent Office must support the stated reason with actual evidence. *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999). Even if the combination is proper, to establish *prima facie* obviousness the combination must still teach or suggest all the claim elements. MPEP § 2143.03. If the Patent Office cannot establish obviousness, the claims are allowable.

Applicant initially traverses the rejection because the Patent Office has not provided any motivation to combine the references, nor has the Patent Office provided any evidence in support of the motivation to combine. That is, the Patent Office states "[it] would have been an [sic] obvious to one of ordinary skill in the art at the time of the invention was made to modify and/or provide the apparatus of Wachi et al. with a display of peaks, as that of Higgs et al." (Office Action of July 22, 2005, page 2, lines 21-23). This statement does not set forth any motivation as to why the combination/modification would be obvious. Thus, there is no suggestion to

combine the references. Even if this statement is a motivation to combine the references, it lacks any evidence to support the motivation. As such, the proffered motivation violates both prongs of the *Dembiczak* requirements and is improper. Since the motivation is improper, the combination is improper. Since the combination is improper, the rejection is improper. Applicant requests withdrawal of the § 103 rejection on this basis.

Even if the combination is proper, a point which Applicant does not concede, the combination does not establish obviousness. The independent claims, as amended, recite comparing the sensor readings to a database of fingerprints associated with the external probes. Wachi does not teach or suggest this element. Higgs does not teach or suggest this element. While the Patent Office asserts, with reference to previous claims 10-12, that Higgs teaches a fingerprint with VRT video display 42 (see Office Action of July 22, 2005, page 3, line 4), the existence of a video display 42 is not the same as the recited database of fingerprints. If the Patent Office wishes to maintain this rejection, Applicant requests clarification as to how the video display 42 is a fingerprint. In the absence of such an explanation, there is no fingerprint in Higgs. Since the references individually do not teach or suggest this element, the combination of references cannot teach or suggest the element. Since the combination of references cannot teach or suggest the claim element, the combination does not establish obviousness. Since the combination does not establish obviousness, the claims are allowable.

Applicant preemptively addresses any implicit rejection of the claims under Chung (the reference provided by Examiner Argenbright in the telephonic interview). Anticipation requires identity between the reference and the claimed invention. The standard for obviousness is set forth above.

The claims as amended recite an external probe. Both Wachi and Chung are internal systems that communicate with the vehicle's computer. As such, there is no disclosure of the recited external probe. Thus, Chung cannot anticipate the amended claims.

The independent claims also recite a database of fingerprints. In contrast, Chung is designed to work on a single engine and calculates where the peak of the oxygen level is in comparison to the position of the crankshaft. If the peak is between $\theta 1-\theta 2$ then one cylinder is identified; if the peak is between $\theta 2-\theta 3$, another cylinder is identified, etc. Because Chung is determining the rotational position of the crankshaft, there is no comparison to a database of

fingerprints as recited in the claims. This provides an independent reason why the independent claims are not anticipated.

With respect to an obviousness analysis, there is no reason of record to combine Chung with another reference to show either the external probe or the database of fingerprints as recited in the independent claims.

Some claims deserve special mention. Claims 2, 3, and 14 recite a lambda sensor. In contrast, Chung teaches a wide-range oxygen sensor. These two sensors are recognized in the industry as being distinct and different items, with wide-range sensors generally being much more expensive. As such, Chung does not anticipate claims 2, 3, and 14.

Claims 5, 15, and 27 specifically recite that a misfire is identified. As set forth in the 1.132 declaration, the identification of a misfire in a particular cylinder was thought to be impossible. As such, even if there is some motivation to combine Chung with another reference, the secondary consideration of the skepticism of experts weighs against a finding of obviousness for claims 5, 15, or 27.

Claims 6 and 25 recite that the database of fingerprints is derived empirically. There is no indication as to how Chung determines his crankshaft position ranges ($\theta 1$–$\theta 2$). As such, there is no indication that his positional ranges are empirically derived.

Claims 8 and 17 recite inferentially detecting the oxygen level. Chung and the other references of record use oxygen sensors to detect the oxygen level directly. Nothing in the record shows any inferential detection of oxygen levels as recited in claims 8 and 17.

Claim 11 recites that the database has fingerprints for different engines. Chung only addresses a single engine. Since Chung does not show multiple engines, Chung cannot anticipate the claim. This distinction goes to the versatility of the current invention in that it can be used to test any vehicle. In contrast, Chung is an internal system that only detects oxygen levels for the vehicle in which the system is installed.

Claims 12, 26, and 28 recite further details about how the empirical database is created. Specifically, known inefficiencies are introduced and the oxygen levels are recorded. None of the references of record teach this method of generating such a database.

New claim 30 recites identifying which type of engine is being tested. Since Chung and Wachi are directed to internal systems, no such identification is made. The systems of Chung and Wachi only operate on single engines.

If the Patent Office disagrees and believes that these elements are shown, Applicant requests that the Patent Office identify with particularity where in the references these elements appear. The sweeping nature of the previous rejections is not conducive to such an identification. In absence of such an identification, the claims are not anticipated or obvious over the rejections of record.

Applicant requests reconsideration of the rejections in light of the remarks presented herein. Applicant earnestly solicits claim allowance at the Examiner's earliest convenience.

Respectfully submitted,
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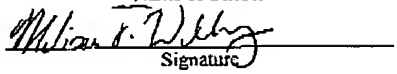
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